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Tentative Title of the thesis

STUDIES ON THE NUTRITIONAL QUALITY OF EDIBLE FRESHWATER PRAWNS FROM NANDED REGION (M S) INDIA

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Introduction :

The giant freshwater prawns *Macrobrachium rosenbergii* & *Macrobrachium Malcolmsonii* is one of the most cultured crustacean species worldwide due to its nutritional value, good meat quality, and high growth rate. The production of *M. rosenbergii m. Malcolmsonii* is considered economical and more environmentally sustainable than that of other intensively reared species of crustaceans, as low stocking densities are often used . However, this aquaculture sector is still challenged by the species' dependence on diets containing high percentages of unsustainable and expensive marine-derived ingredients, such as fish meal , which necessary to ensure proper growth and welfare .

In recent decades, great efforts have been made within *M. rosenbergii* & *malcolmsonii* farming to reduce the costs and the environmental footprint of dietary formulations by replacing with alternative protein sources of both plant and animal origin . Plant-derived ingredients were first sought because of their wider availability and competitive costs . In particular, it was first demonstrated that soybean meal could partially or totally replace in diets for *M. rosenbergii* & *malcolmsonii* without a negative effect on growth. However, further studies on *M. rosenbergii* & *malcomsonii* that performances with protein metabolism, antioxidant capacity, and intestinal microbiota demonstrated that replacement with soybean meal should not exceed 50% .

Monitoring the overall welfare of crustaceans through their physiological responses is of primary importance when new aqua feed ingredients are tested, especially for species such as the giant freshwater prawn that are frequently subject to infectious diseases with consequent economic losses. In this regard, feed additives or probiotics that are able to enforce the resistance to pathological and environmental stresses of *M. rosenbergii & malcolmsonii* have been successfully used as a better alternative to chemicals and antibiotics . Furthermore, to increase aqua feed sustainability, great attention has been given to alternative ingredients; for example, microbial biomass and insect meal, in addition to their immuno-stimulant features, may offer the possibility of replacing high amounts of as a major protein source

It belongs to the phylum Arthropod and class Crustacea. Its body is bilaterally symmetrical and the appendages are joined or segmented. Its body is composed of two regions,

namely abdomen and cephalothorax. Cephalothorax is divided into head and thorax. There are 19 pairs of appendages, which are used in catching food, walking, swimming etc. There is an extension in the cephalothorax named rostrum, which is compressed laterally and serrated. The prawn is a nocturnal and unisexual animal. They can swim in water with the swimming appendages and walk with the walking appendages on the soil in the bottom of water. There are different types of species of prawn in our country, out of which a few species live in fresh water.

Purpose of carrying out proposed research work:

The prawns is one of the high value aquaculture product emerging from Asia. At present feed is the largest single cost item, as it constitutes 40-60% of operational cost in prawn production. Hence feed to attain higher growth and more efficient feed conversion ratios needs to be developed. In this context, the use of feeding attractants will have relevance in improving feed intake and feed efficiency and to minimize feed wastage and water pollution. It is a tasty protein food.

Economic development can be achieved through prawn culture. Prawn takes part in earning foreign currency. It is much profitable to cultivate prawn in fresh water at a comparatively lower cost. Well. So, it is very profitable to cultivate prawn in a planned scientific manner.

Survey of literature review :

Oil and pigments from shrimp processing by-products: Extraction,Composition, bioactivities and its application-

Saqib Gulzara, Navaneethan Rajua, Ravishankar Chandragiri Nagarajaraob, Soottawat Benjakula,∗A Department of Food Technology, Faculty of Agro-Industry, Prince of Songkla University, Hat Yai, Songkhla, 90112, ThailandB Central Institute of Fisheries Technology, Willingdon Island, Matsyapuri P.O, Cochin, Kerala, 682 029, India Necessity of Dietary Cholesterol for the Freshwater Prawn

Shin-ichi Teshima, Manabu Ishikawa, Shunsuke Koshio, And Akio KanazawaFaculty of Fisheries, Kagoshima University, 4-50-20 Shimoarata, Kagoshima, 890 Japan

Extraction and characterisation of crab and prawn exoskeleton Thermodynamic Studies of Arsenic and Copper Adsorption from Electroplating Wastewater Sumaila A.*1, 3, Ndamitso M. M.1, Iyaka Y.A.1, Abdulkareem, A.S.2, Tijani J. O.1, IdrisM.O.3

Comparative study on the nutritional content and physicalAttributes of giant freshwater prawn (Macrobrachium rosenbergii) And redclaw crayfish (Cherax quadricarinatus) meats

Estimation of Protein content in five shrimp species by three differentMethods found in coastal waters of Pakistan

Research gap:

As the fishery production is increasing day by day as per the requirement of nutrients the world due to this demand of nutr effluent has increased. So, the research on this topic should also increase. The area which we selected for the study is near to the to water resources area and the research on this topic is not yet done there.

Importance of the study:

In India on large scale sea food availability is abundant. The taste of sea food is already Common and developed. But fresh water food is more tasty and different from sea food. So if pay attention toward proper resources management, resulting in huge production of fresh Water food.

1) Increase in production to meet protein requirement.
2) Improving the social economic condition of fisherman
3) Development of export potential

International status

Freshwater prawns were collected from the wild and on-grown to market sizein impoundments earlier, true culture systems began to be developed after 1962. Pioneer workby Shao-wen Ling in Penang, Malaysia, succeeded in closing the life cycle (Ling, 1977) of the giant long-legged prawn, Macrobrachium rosenbergii, stimulating widespread interest in the commercial potential of culturing this and other members of the palaemonid family of crustacea. Enthusiasm for the culture of this genus was infectious, sometimes with scant thought about the potential markets for freshwater prawns. This was spurred by the fact that,

at that time, it had not been possible to close the life cycle of marine shrimp, for which there was an established global market.

In 1965–1966 Macrobrachium rosenbergii was imported into Hawaii, where Takuji Fujimura and his team at the Anuenue Fisheries Research Centre developed mass rearing techniques for larval production (Fujimura and Okamoto, 1972). Successful grow-out experiments in Hawaiian ponds were soon followed by early attempts to establish commercial farming of this species in many other places, including Australia and Mauritius. For several years it was Hawaii that remained principally linked with freshwater prawn culture in the columns of the aquaculture press. Meanwhile Thailand, a country with a tradition of freshwater prawn consumption.

National status:

Freshwater prawn production in India that includes farming and wild capture of the giant freshwater prawn, Macrobrachium rosenbergii and the monsoon river prawn, M. malcolmsonii has increased steadily since 1999 reaching a peak output of 42 780 t in 2005, but then declined to 6568 t in 2009–2010. Stunted growth and diseases in ponds because of poor seed quality and the bloodstock which had been inbred over several generations; pond water quality issues; and increased cost of production on account of feed, labor and the mandatory certification requirements are suggested to be some of the factors leading to the production declines. While majority of the output occurs in Andhra Pradesh, single crop paddy–prawn production systems in the low-lying fields of Kerala have helped gradual transformation to a sustainable, organic mode of farming of both rice and prawns, suitable for other states of India. Although the trends by June 2011 indicate that the sector is set to a revival, future prospects of freshwater prawn farming in India will also depend on the expansion of white leg shrimp Litopenaeus vannamei that was introduced recently in India and provided a more profitable opportunity for farming.

Regional status: The similar studies has not been conducted in Nanded region, so investigation is needed.

Scope of study: To ensure the quality and safety of crab prawn flesh To encourage

sustainable harvesting and implement conservative strategies for Macrobrachium rosenbergii & malcolmsonii .

Objectives of the proposed research work:

- Morphometric analysis of freshwater prawn .
- To study the nutritional parameter as proximate composition like(Crude protein, Crude carbohydrate, Crude lipid) & mineral like (Ca,Mg,K,P,Fe) composition various tissue of freshwater prawn (*Macrobrachium rosenbergii & Macrobrachium malcomsonii).*
- Biochemical analysis of *Macrobrachium rosenbergii & Macrobrachium malcolmsonii.*
- To study moisture content.
- To study lipid content & Saturated fatty acids.
- To study protein content .
- To study carbohydrates content .
- To study ash content .
- Statistical analysis &comparative study on nutritional content of freshwater prawn

Hypothesis:

By the help of this research, we can find various organism and crustacean in water bodies, and we may find the nutritional parameters parameters which are undertaken for the research. It is also possible that we may found a new type of freshwater shrimp or organisms in water reservoir .

Methodology:

1)Sample collection of prawn *(M.Rosenbergii & Malcolmsonii)*

Prawn where collected form Nanded region and preserved in available tool and placed in research center for laboratory work.

Systematic studies of freshwater prawns of Nanded region

Kingdom	Animalia	Kingdom	Animalia
Phylum	Arthropoda	Phylum	Arthropoda
Class	Malacostraca	Class	Malacostraca
Order	Decapoda	Order	Decapoda
Suborder	Pleocyemata	Suborder	Pleocyemata
Infraorder	Caridea	Infraorder	Caridea
Family	Palaemonidae	Family	Palaemonidae
Genus	Macrobrachium	Genus	Macrobrachium
Species	Rosenbergii	Species	Malcolmsonii

3) Identification and Preservation

The prawn species initially identified with the help of difference in upper and lower rostral teeth carapace stares distal part third maxillae and sex was determined by presence of Petsma on the pair of pleopode in male it is absence

4) Comparative analysis of biochemical composition of freshwater prawns 1) Macrobrachium rosenbergii 2)Macrobrachium malcolmsonii. Of Nanded region.

- Protein extraction by Lowry's method & Biuret method.
- Oil Extraction by distillation from freshwater prawn meat.
- fatty acid extraction by methyl esters.
- Gas chromatography procedure and fatty acid analysis
- Analysis of water-soluble protein of prawn meat.
- Carbohydrates analysis by reagent method

Limitation of the work:

1)Sample are collected in selected study area named Nanded region

2) If collection of samples not done early in morning, then due to sun light the change in temp and various other parameters could be observed.

Expected outcome:

1) Nutritional value of prawn is good resources of protein and fat it also use in good mediational values .In productivity of the prawn it can uplift the economic condition of fisherman an it creates the better opportunity to culture the freshwater prawn (*M rosenbergii & malcolmsonii)*

2) It can good source of protein it provides the best nutritional values in limited Water resources.

3) Freshwater prawn farming is beneficial the integrated fish farming becomes freshwater prawn can creates the more opportunities for farmers.

Year wise plan of work and targets to be achieved:

First year:

Extensive collection of review of literature of given topic

Collection of data of given research topic

Sample collection field visit/survey

Data collection.

Second year:

Field visit/ survey/ selected study area

Identification of nutritive values prawn & Photography Experimental Lab work

Preparation of Research papers

Collection of required instruments

Third year:

Statistical data analysis.

Presentation of tables , graphs, figure, calculation

Paper publication Typing work .

Preparation of final synopsis

Reference collection

Fourth year:

Submission of Thesis

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